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FURNITURE MAKING

ADVANCED PROJECTS IN WOODWORK

By IRA S. GRIFFITH

The Manual Arts Press

Peoria, Illinois



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Book 184

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FURNITURE MAKING

ADVANCED PROJECTS IN WOODWORK

BY IRA S. GRIFFITH, A. B.

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Author of "Woodwork for Beginners," "Essentials of Woodworking," "Carpentry"

"Woodwork for Secondary Schools," "Correlated Courses in Woodwork and Mechanical Drawing,"
and "Projects for Beginning Woodwork and Mechanical Drawing."



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IRA S. GRIFFITH

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PREFACE.

ADVANCED PROJECTS IN WOODWORK is a collection of projects designed to meet the needs of classes in high school woodworking. These projects presuppose familiarity with woodworking processes, tools, and the two simple joints required in the making of projects contained in the author's *Projects in Beginning Woodwork and Mechanical Drawing*.

The drawings are complete only as to their general dimensions. The working out of details, such as the sizes of mortises and tenons and their locations, is left for the pupil in his work in drawing and design.

It is expected that the projects will afford suitable basic material for classes in woodworking design. It remains for the instructor to point out the manner in which this material may be used. For illustration, many beginning students are slow in appreciation of possible modifications in structure or decoration. Circular tops may be used instead of square or octagonal, and vice versa. Modification of the manner of filling side spaces with slats offers variety in initiative. Vertical posts may be made tapering and vice versa. Rails and stretchers may be variously employed. There is almost always a choice in the matter of joints,—keyed or thru or blind tenon. Fig. 1 is suggestive as to possible modifications of a type.

In addition to the possible structural modifications, the plates suggest variation in the matter of decorative ornament such as pierced and carved forms and simple inlay. Such ornament will, of course, be kept subordinate to the structural design.

The upholstering of stool tops and seats for chairs provides another problem in variation.

Little, if any, use is made of dowels as substitutes for the mortise-and-tenon. While it is true that modern commercial practice makes much use of dowels in this way, the author feels that such practice is too often contrary to the principles of good construction. Its genesis lies in economy of material rather than in any superiority as a fastening device.

In the designing of these projects the author has had in mind at all times the thought that most

of the students using them would have access only to a hand-saw or jig-saw and a miter-box in addition to the regular hand tool equipment. For this reason such projects as hall clocks, mission beds, etc., have been excluded. The exceptional student will find projects of sufficient size to

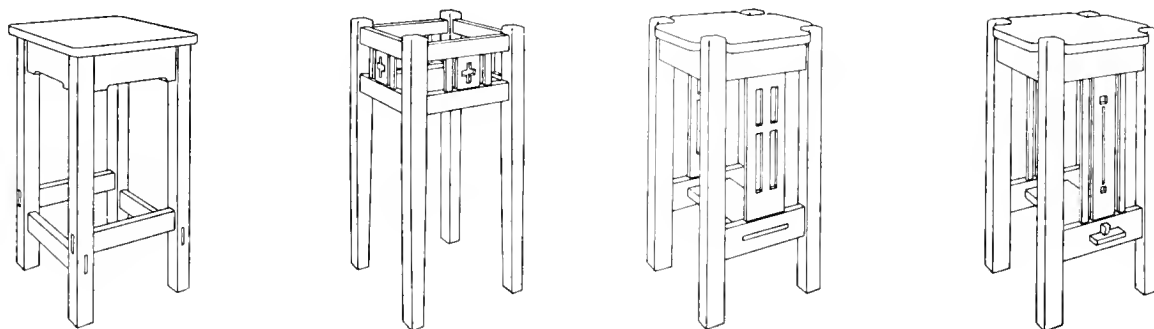


FIG. 1.

tax his ability and muscle. Easier projects and lighter projects have been provided for the weaker members of the class while the use of slats or their omission will provide additional variation in time of execution.

The use of stock ordered S-4-S (surfaced on four sides) has not been anticipated. The use of stock S-2-S and moldings such as are carried in stock by lumber yards is presupposed. If a working principle for the use of stock partly prepared were asked for it would be: Any material

that is carried as stock and which does not have to be ordered especially worked for the project a boy elects or designs may be made use of legitimately. Such a principle would permit the use of stock S-2-S, moldings of stock pattern, hardware such as hinges and locks without any suggestion of deception. It would exclude table legs and tops, etc., especially prepared at a mill, and offers a rational dividing line between two extremes, neither of which is desirable.

Of course, these projects may be used in the teaching of the use of woodworking machinery.

No definite notes as to methods of procedure are given in this book for the student is supposed to have acquired, thru experience with the projects in the elementary book, enough insight to enable him to proceed on his own accord. Definite instruction in making the new joints, in wood-finishing, etc. will be found in *Essentials of Woodworking*, or *Woodwork for Secondary Schools*, companion books by the same author.

While these projects are especially arranged for use with the courses outlined and discussed in *Correlated Courses in Woodwork and Mechanical Drawing*, by the author, there is nothing in the form of the plates themselves to prevent their being used with any course in woodwork.

July, 1912

IRA S. GRIFFITH.

The inking of the drawings and the making of the perspectives in this book is the work of Mr. George Gordon Kellar.

LIST OF PLATES.

GROUP IX.—JOINERY.

- | | | |
|--|------------------------------|----------------------------|
| 1. Exercises—Keyed tenon, Blind Mortise-and-Tenon. | 12. Taboret (octagonal top). | 26. Book Trough. |
| 2. Exercises—Miter Joint, Glue Joint. | 13. Taboret (round top). | 27. Screen. |
| 3. Exercises—Modeling, Hammer Handles. | 14. Small Table. | 28. Tea Table. |
| 4. Necktie Rack. | 15. Taboret (square top). | 29. Hall Rack. |
| 5. Footstool. | 16. Piano Bench. | 30. Wall China Rack. |
| 6. Book-rack. | 17. Piano Bench. | 31. Side Chair. |
| 7. Upholstered Stool. | 18. Book Stand. | 32. Arm Chair. |
| 8. Leg Rest. | 19. Umbrella Stand. | 33. Morris Chair. |
| 9. Cricket. | 20. Umbrella Stand. | 34. Electric Reading Lamp. |
| 10. Wall Shelves. | 21. Jardiniere Stand. | 35. Pedestal. |
| 11. Stool (square). | 22. Magazine Stand. | 36. Occasional Rocker. |
| | 23. Roman Seat. | 37. Mission Chair. |
| | 24. Light Stand. | 38. Drop Leaf Table. |
| | 25. Stool (square). | |

GROUP X.—CABINET WORK.

- | | | |
|---|----------------------|-------------------------|
| 39. Exercises—Mortise-and-Tenon Joint, Rabbeted Joint, Grooved Joint. | 41. Waste Paper Box. | 46. Chafing-dish Stand. |
| 40. Exercises—Thru Multiple Dovetail, Half-blind Dovetail. | 42. Wall Cabinet. | 47. Cabinet. |
| | 43. Telephone Table. | 48. Library Table. |
| | 44. Sewing Cabinet. | 49. Writing-desk. |
| | 45. Writing Table. | 50. Dressing Table. |
| | | 51. Linen Chest. |

PRICE LIST FOR YEAR 19____, 19____

LUMBER—Quality, 1st, clear, and kiln-dried.

KIND OF WOOD	Per 1000 feet when surfaced on two sides							
Thickness in the Rough	$\frac{3}{8}$ "	$\frac{1}{2}$ "	$\frac{5}{8}$ "	$\frac{3}{4}$ "	1"	$1\frac{1}{4}$ "	$1\frac{1}{2}$ "	2"
Yellow Poplar								
White Pine								
$\frac{3}{4}$ Sawn White Oak								
Mahogany								
$\frac{3}{4}$ Sawn Red Sycamore								
Black Walnut								
Plain Sawn Red Oak								

HARDWARE—

For prices on hardware consult Hardware Catalog provided for you.

Figure retail price, that is, figure screws at price per dozen, not price per gross.

WOODFINISH—

Per square foot of surface covered.

LABOR—

Per hour.

NAME _____
CLASS _____
ARTICLE _____

DATE BEGUN _____
DATE FINISHED _____
EXTRA HOURS _____

TOTAL COST \$5.34

INSTRUCTIONS FOR MAKING BILL OF MATERIAL.

Under "pieces" put the number of parts that are alike.

Under "size" put the various dimensions of pieces. In finding the sizes of the various pieces of lumber, examine the working drawings for finished dimensions, making due additions for tenons, then add $\frac{1}{4}$ " to the width and $\frac{1}{2}$ " to the length to allow for cutting out and squaring up. Tho you are to make use of stock mill-planed to thickness, you are to specify the thickness from which this mill-planed stock is got. Allow at least $\frac{1}{8}$ " for mill-planing.

Remember that length always means along the grain.

Fractions of an inch in width and length are not considered. Neither are fractions of a cent in the final results. If the fraction is $\frac{1}{2}$ or over, take the next higher whole number. If it is less than $\frac{1}{2}$, drop it. Fractions of an inch in thickness that are over 1" and fractions of a cent in the price per foot are to be figured as they are.

Lumber is measured by the superficial foot which is 1" x 12" x 12". Boards that are less than 1" thick are sold by surface measure. In other words, boards less than 1" thick are figured for quantity as 1" thick.

Standard sawed thicknesses are 1", $1\frac{1}{4}$ ", $1\frac{1}{2}$ ", 2", $2\frac{1}{2}$ ", 3", $3\frac{1}{2}$ ", 4". Thicknesses less than 1" necessitate re-sawing these sizes. In some communities the price per square foot for re-sawed stock varies for each difference of $\frac{1}{4}$ " in thickness.

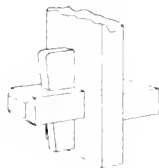
In figuring, multiply the length by the width by the thickness, by the number of pieces. If any piece is less than 1" thick figure it as 1". Combine all results that are the same in price per foot. Reduce to square feet by dividing by 144. Reduce decimally and do not carry the result beyond tenths place. Dispose of any fractional part beyond tenths as directed above.

The price list gives the price of lumber per 1,000 feet. The price per foot is readily obtainable.

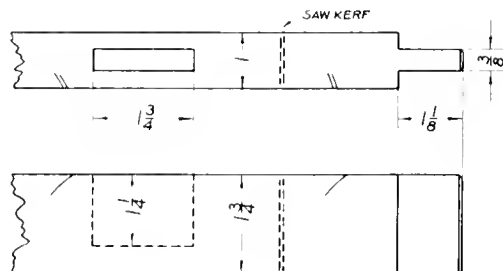
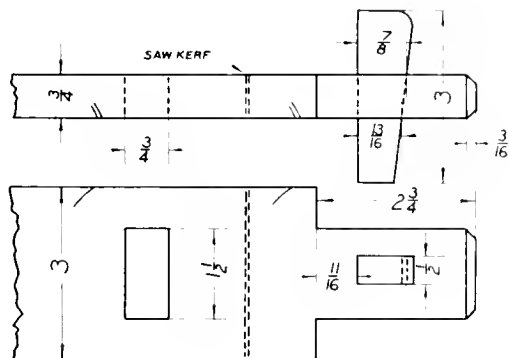
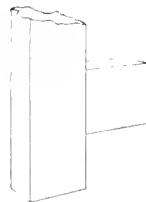
In figuring finish for these cabinet pieces, double the number of feet of stock as given by the stock bill to get the number of feet of finish. This is only an approximate method but is sufficiently accurate for such pieces as are to be made in first year high school, as specified in Group IX of this book.

EXERCISE (PREPARATORY TO GROUP IX)

KEYED TENON

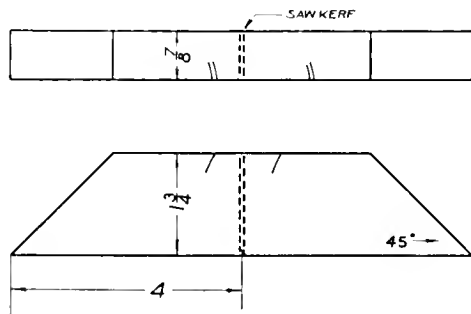


BLIND MORTISE AND TENON

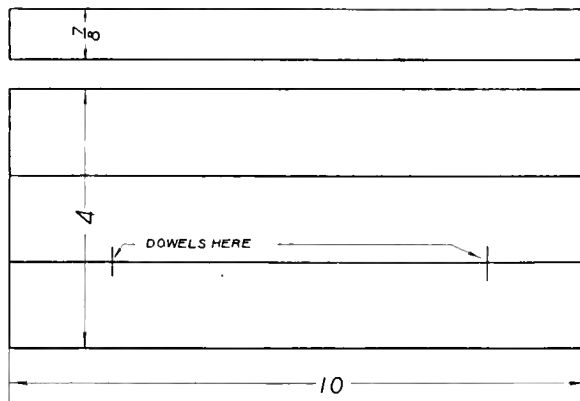


EXERCISE (PREPARATORY TO GROUP IX)

MITER JOINT

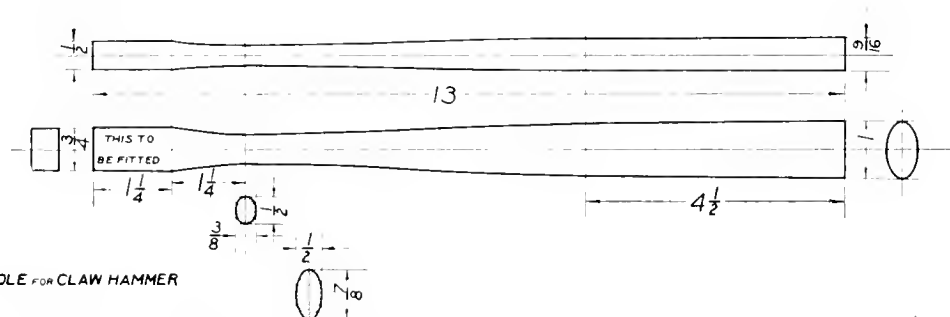


GLUE JOINT-DOWELING

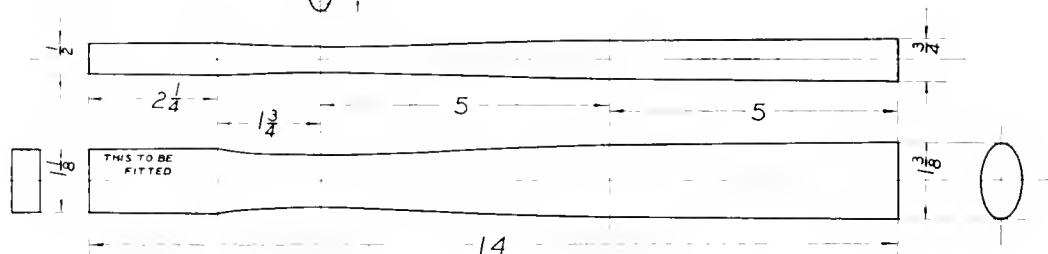


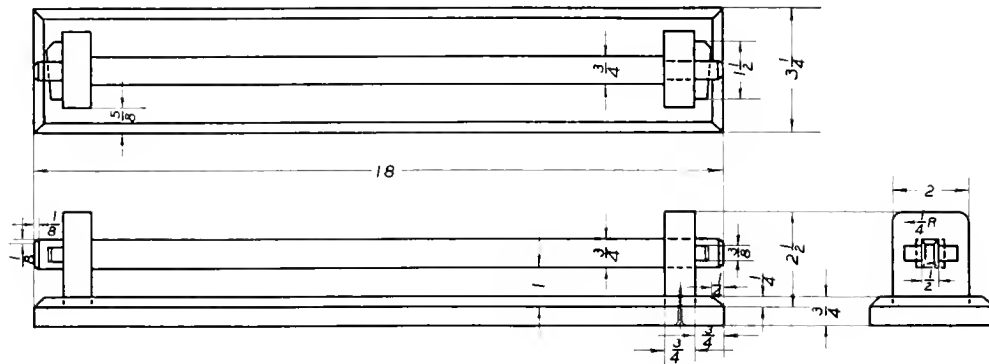
EXERCISE PREPARATORY TO GROUP IX (CHOOSE ONE)

HANDLE FOR BALL PEEN HAMMER

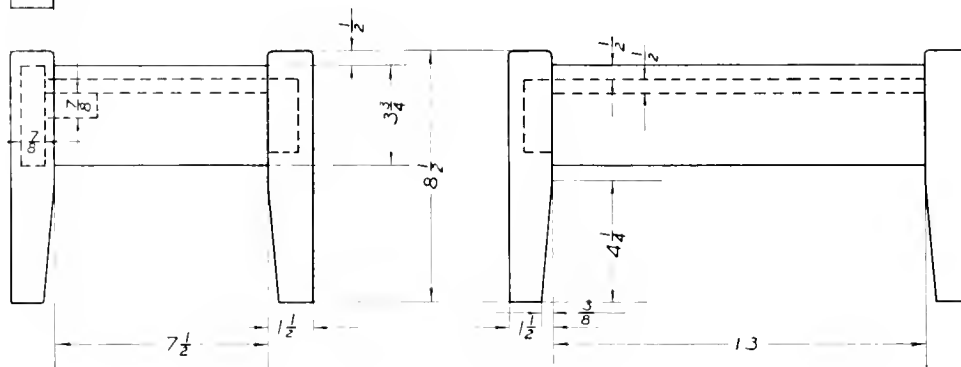
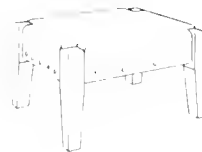
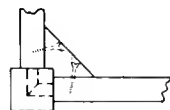


HANDLE FOR CLAW HAMMER



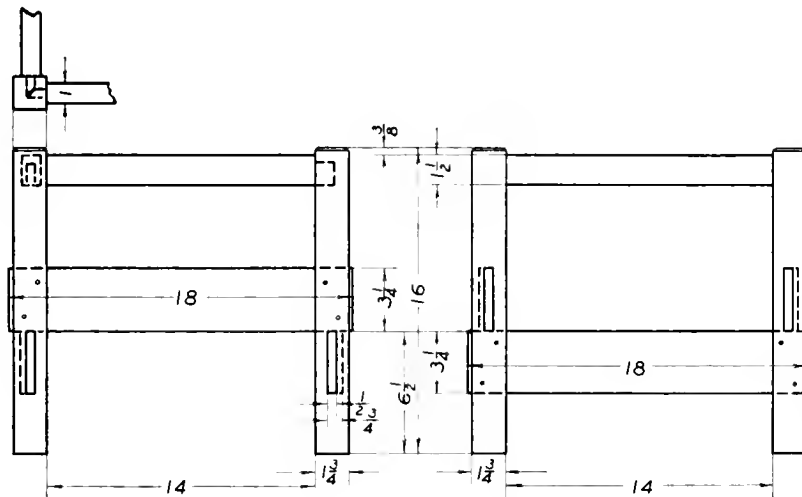
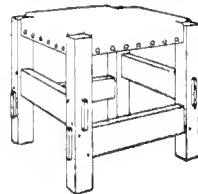


FOOT STOOL

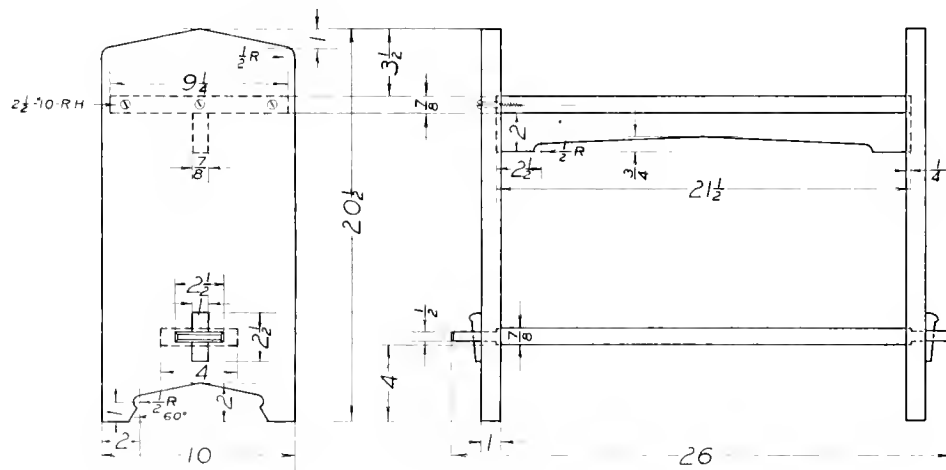
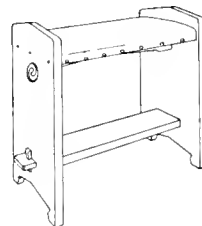




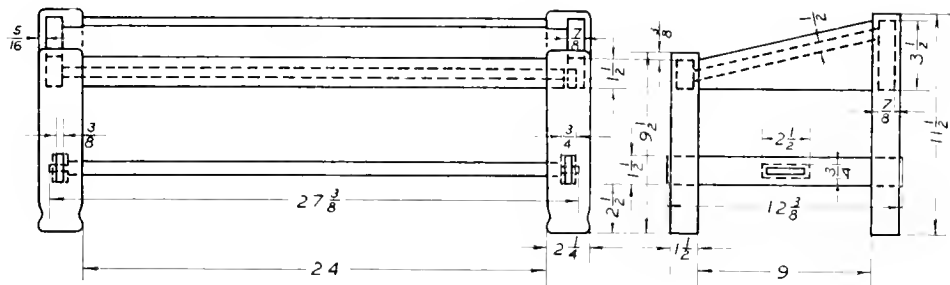
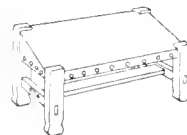
UPHOLSTERED STOOL



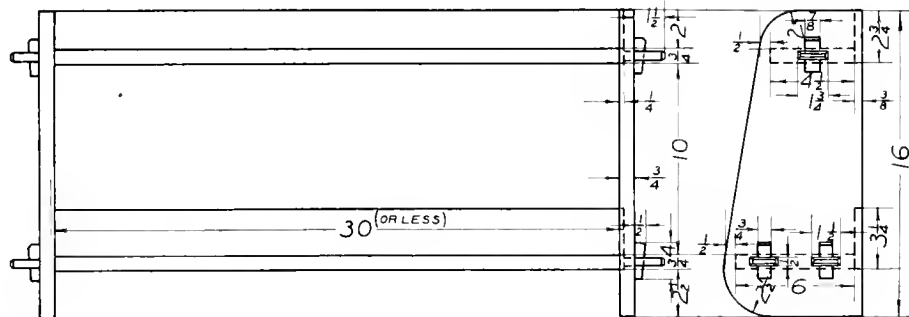
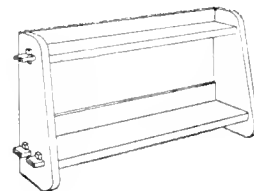
LEG REST



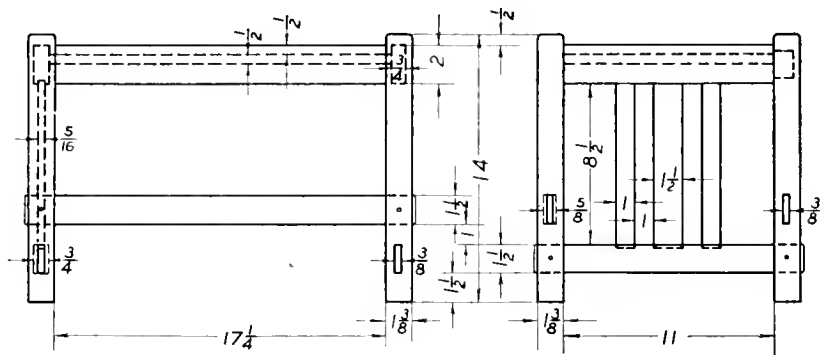
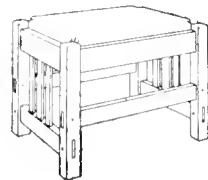
CRICKET



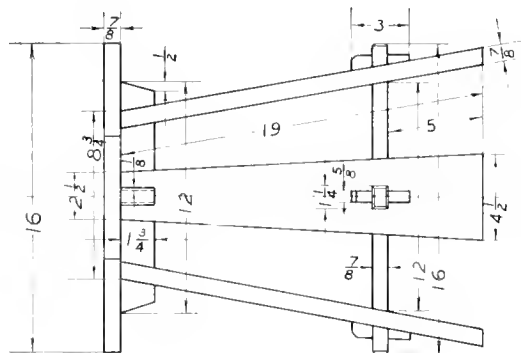
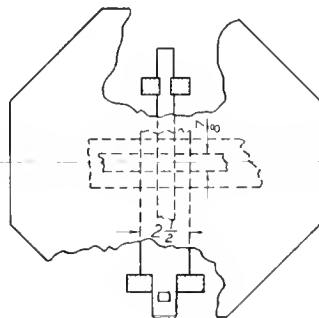
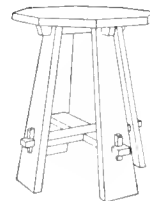
WALL SHELVES



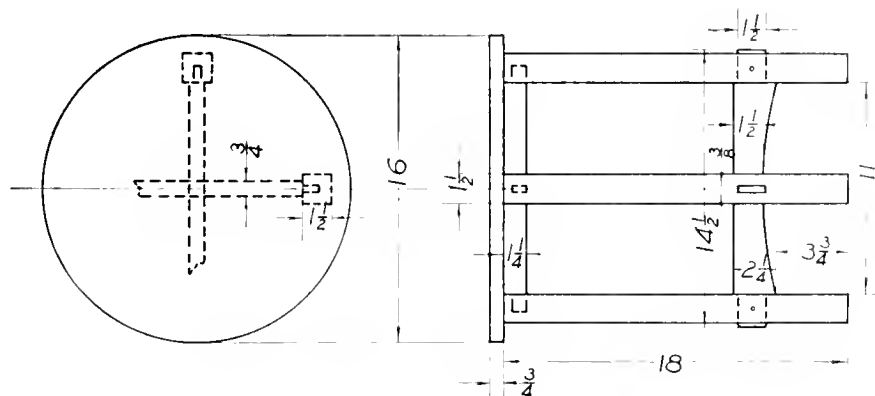
STOOL

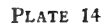


TABORET



TABORET





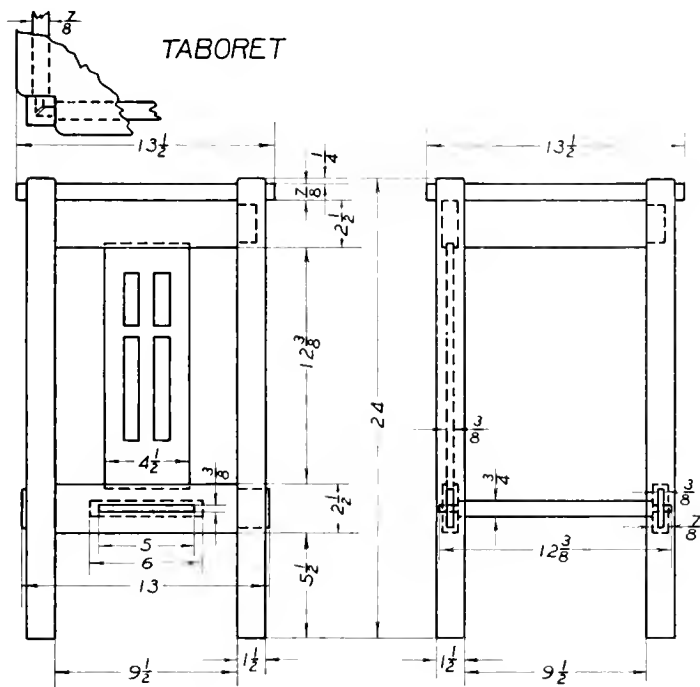
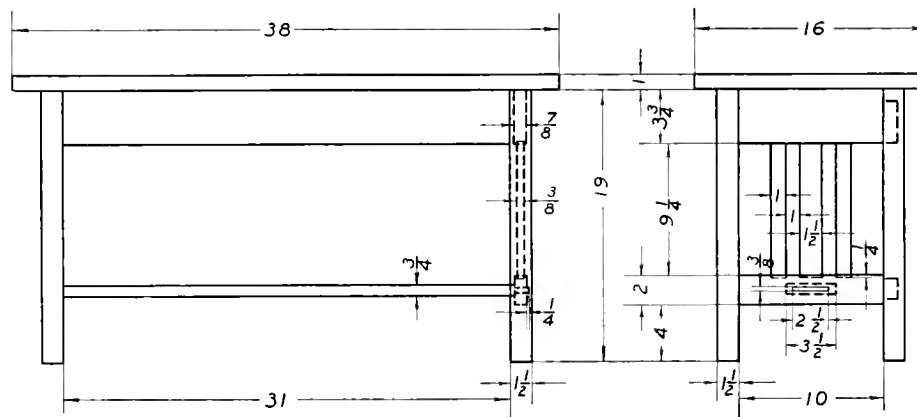
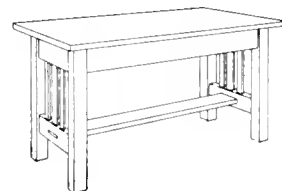


PLATE 15

PIANO BENCH





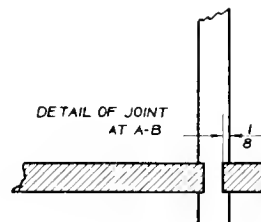
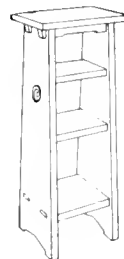
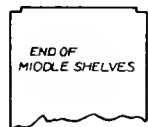
Technical drawing of a wooden cabinet, showing front and side views with dimensions in inches and fractions.

Front View (Left):

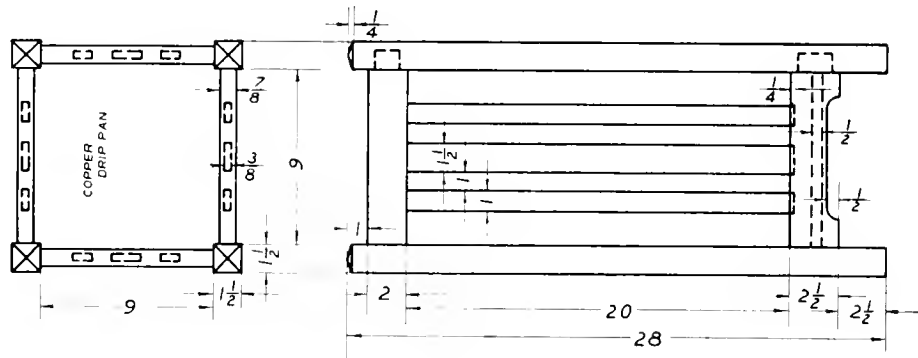
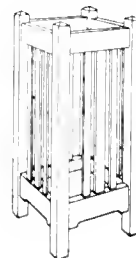
- Overall width: 16
- Top shelf thickness: $\frac{3}{4}$
- Distance from left edge to center of top shelf: $14\frac{3}{4}$
- Distance from left edge to center of middle shelf: $13\frac{1}{2}$
- Distance from left edge to center of bottom shelf: $11\frac{1}{2}$
- Distance from left edge to center of base: $11\frac{1}{2}$
- Distance from left edge to center of base (alternative measurement): $14\frac{3}{4}$
- Distance from left edge to center of base (alternative measurement): $13\frac{1}{2}$
- Distance from left edge to center of base (alternative measurement): $11\frac{1}{2}$

Side View (Right):

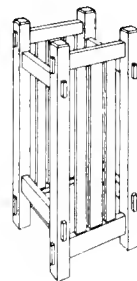
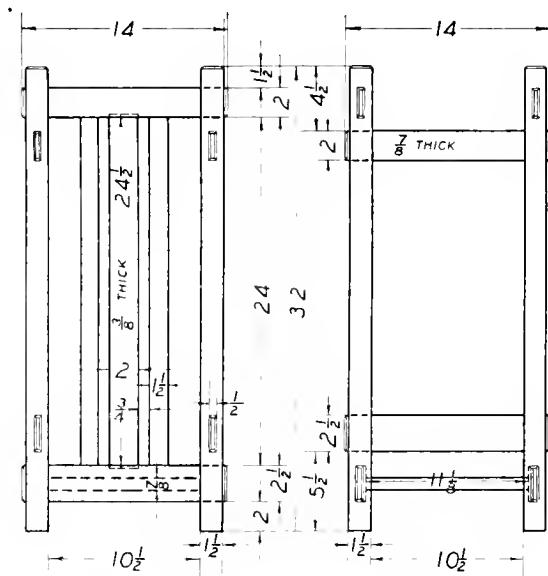
- Overall height: 38
- Top shelf thickness: $\frac{3}{4}$
- Distance from top shelf to middle shelf: 9
- Distance from middle shelf to bottom shelf: 9
- Distance from bottom shelf to base: 5
- Distance from top shelf to middle shelf (alternative measurement): $14\frac{3}{4}$
- Distance from middle shelf to bottom shelf (alternative measurement): $13\frac{1}{2}$
- Distance from bottom shelf to base (alternative measurement): $11\frac{1}{2}$
- Distance from top shelf to middle shelf (alternative measurement): $14\frac{3}{4}$
- Distance from middle shelf to bottom shelf (alternative measurement): $13\frac{1}{2}$
- Distance from bottom shelf to base (alternative measurement): $11\frac{1}{2}$



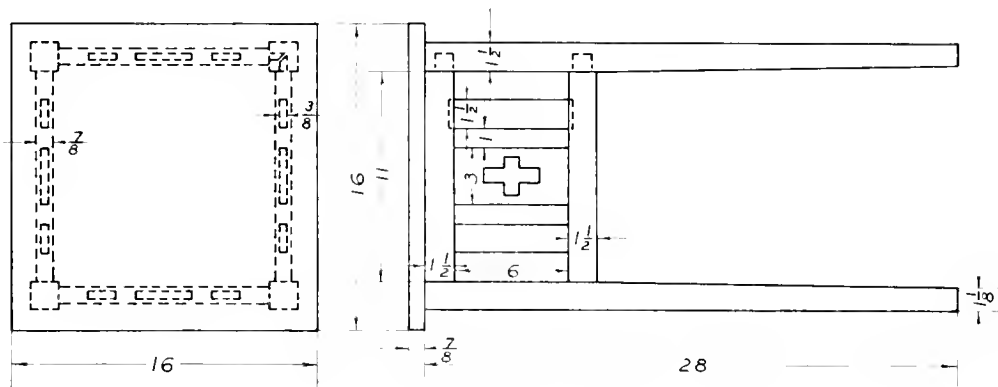
UMBRELLA STAND

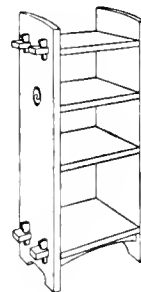
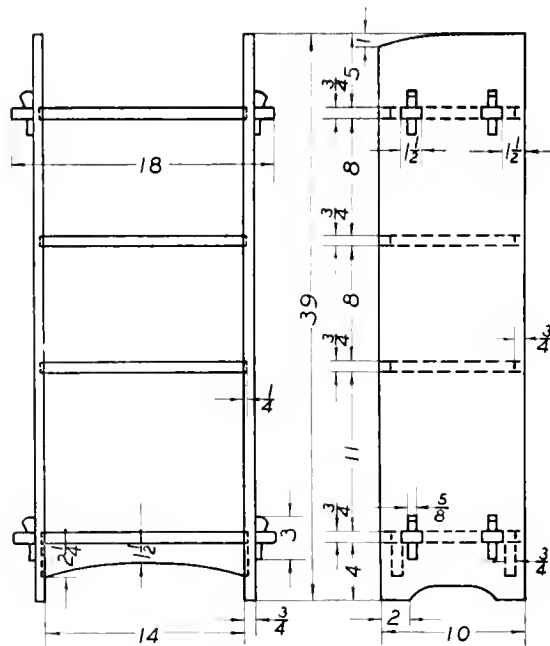


UMBRELLA STAND



JARDINIERE STAND



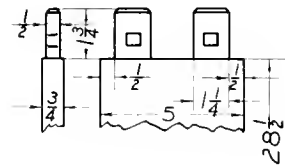
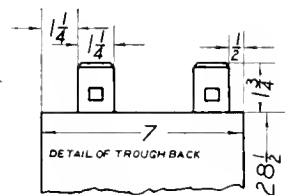
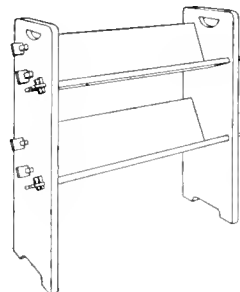
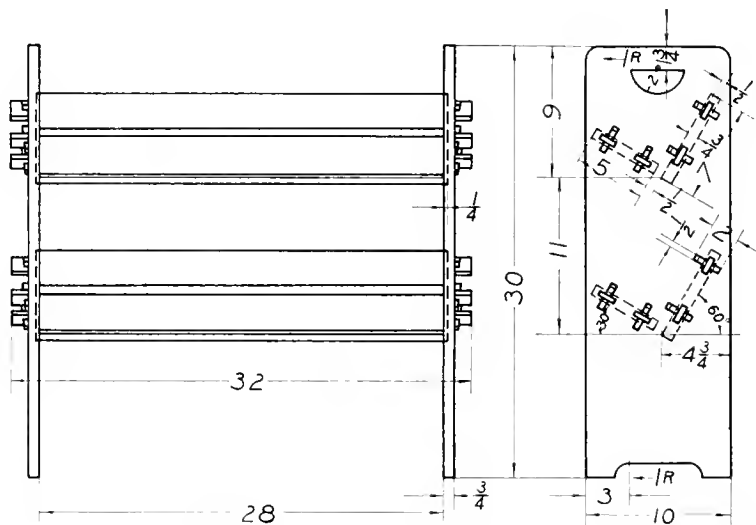




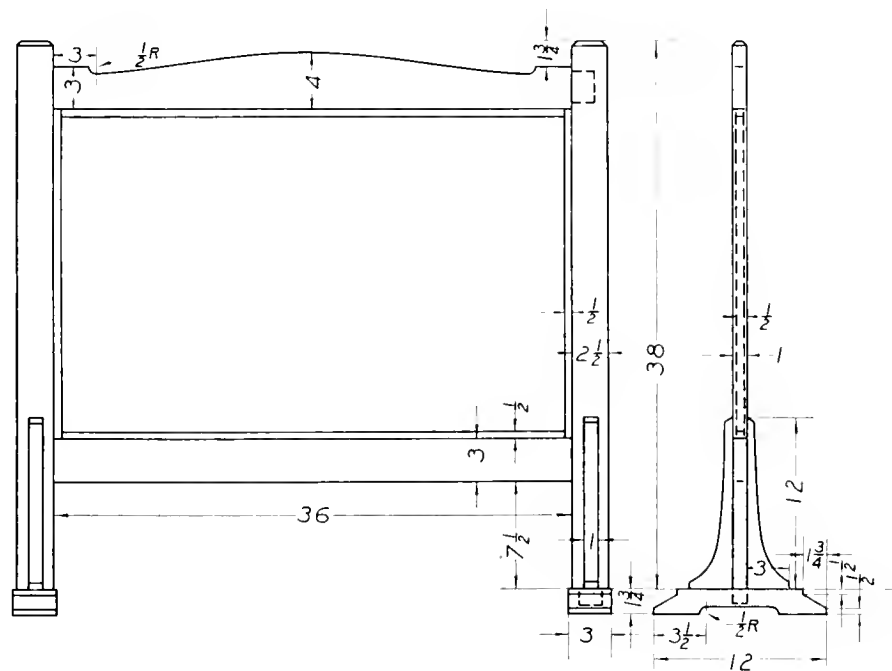




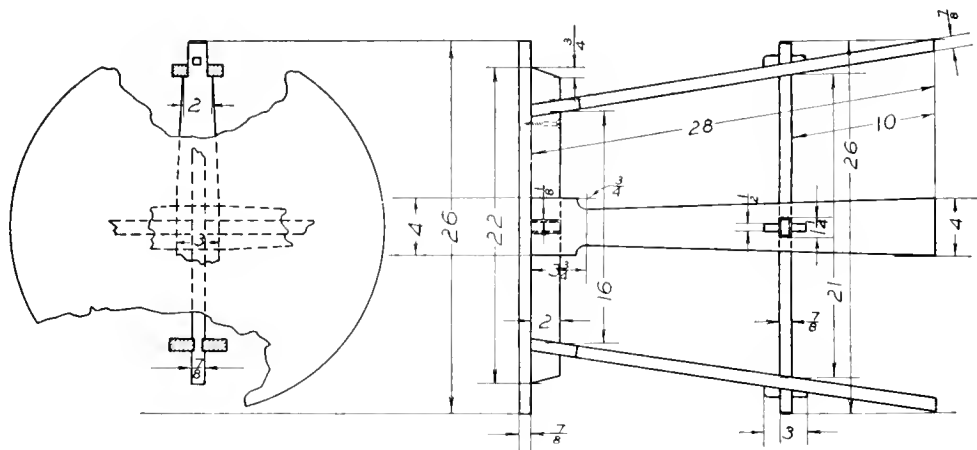
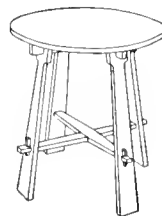
BOOK TROUGH



SCREEN



TEA TABLE



HALL RACK

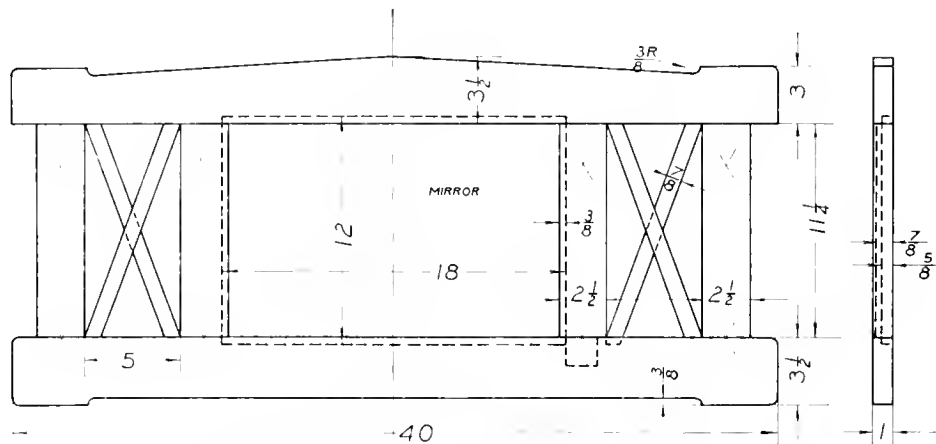
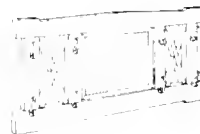
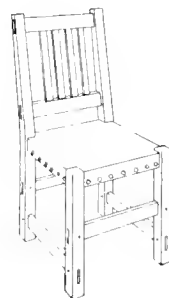


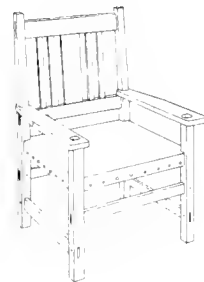
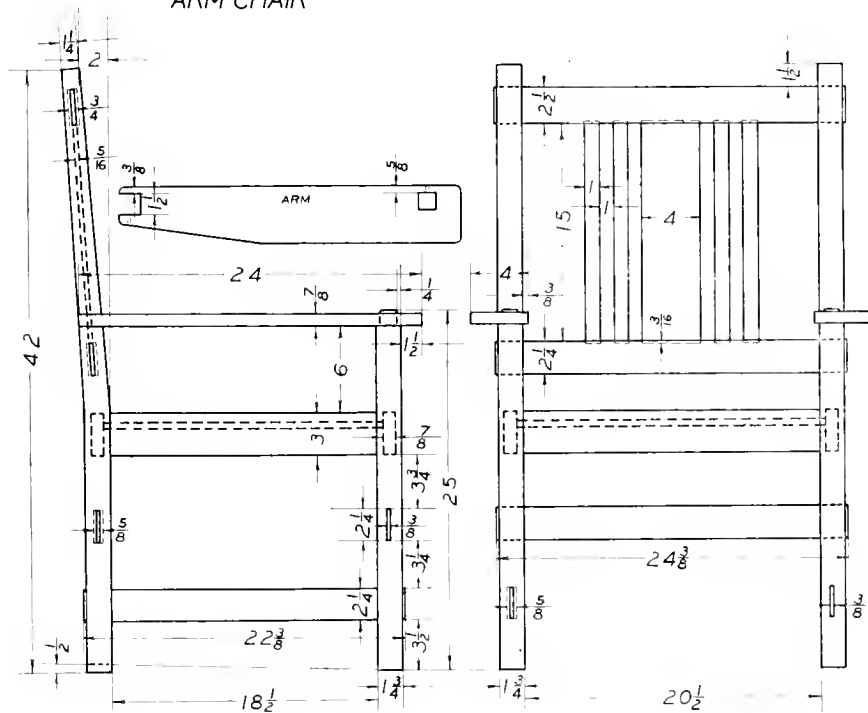


PLATE 30

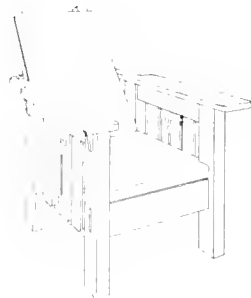
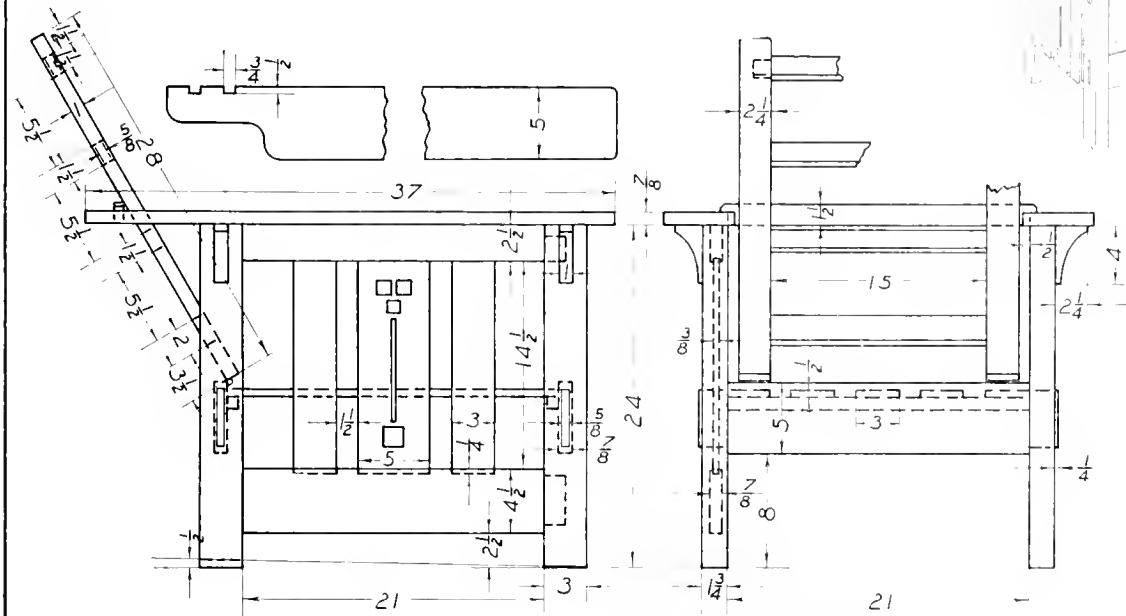
PLATE 31



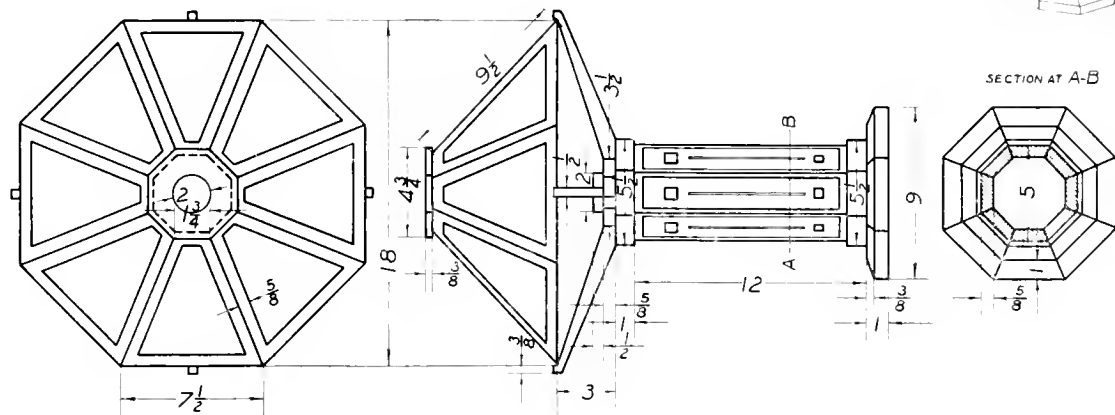
ARM CHAIR



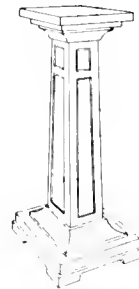
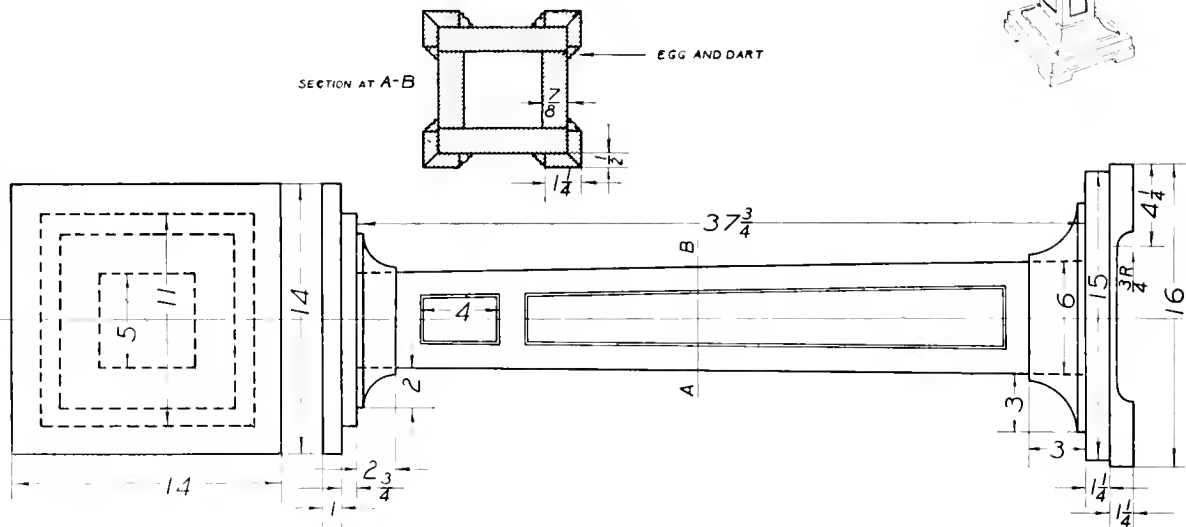
MORRIS CHAIR



ELECTRIC READING LAMP



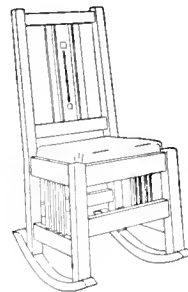
PEDESTAL

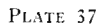


The technical drawing illustrates the construction of a wooden rocking chair through three distinct views:

- Front View (Top Left):** Shows the chair's profile from the front. Key dimensions include a seat height of 16 inches (40 cm) and a total height of 34 inches (86 cm). The seat width is 15 inches (38 cm).
- Side View (Bottom Left):** Provides a perspective of the chair's side, highlighting the curved rockers. Dimensions shown are 27 inches (69 cm) for the rocker length, 15 inches (38 cm) for the seat width, and 13 1/2 inches (34 cm) for the backrest height.
- Back View (Right):** Displays the rear of the chair, featuring the backrest and its attachment points. Dimensions include a backrest width of 16 inches (40 cm) and a seat depth of 13 1/2 inches (34 cm).

The drawing uses standard architectural notation, with solid lines for visible edges and dashed lines for hidden internal components. Measurements are provided in both imperial (inches) and metric (centimeters) units for precision.

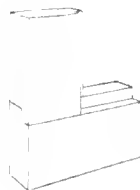




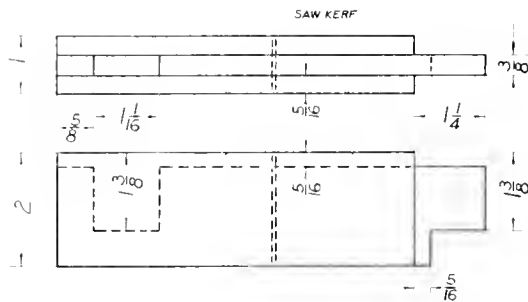
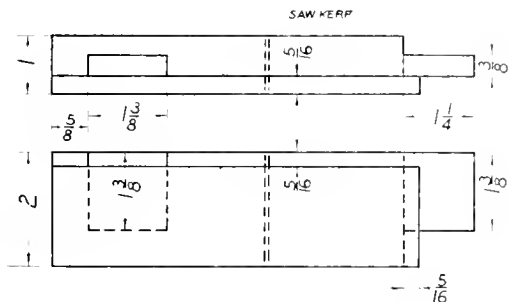


EXERCISE - PREPARATORY TO GROUP X

MORTISE AND TENON-RABBETED

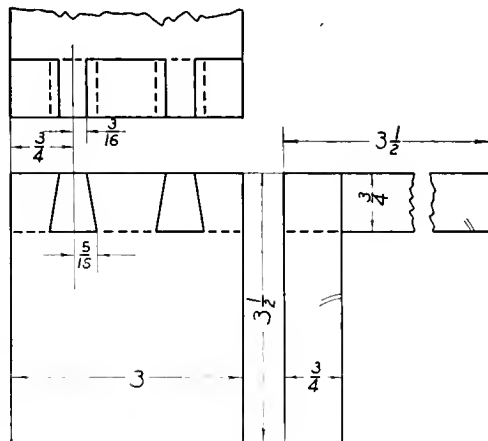
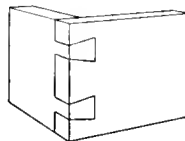


HAUNCHED MORTISE AND TENON-GROOVED

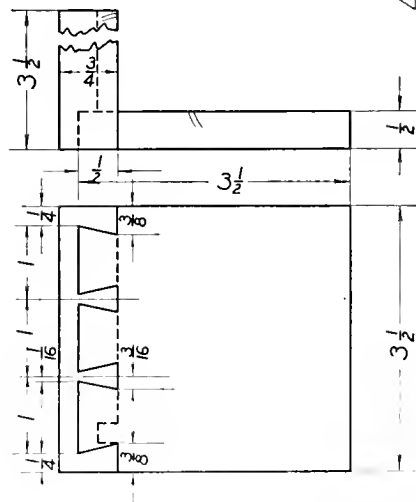
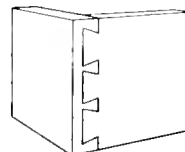


EXERCISE—PREPARATORY TO GROUP X

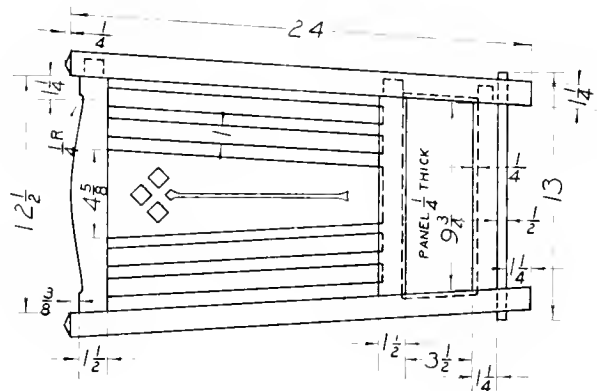
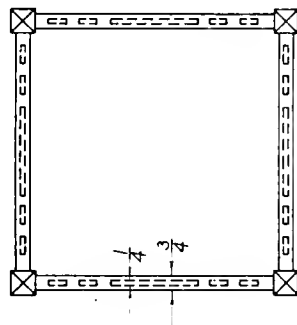
THRU MULTIPLE DOVETAIL



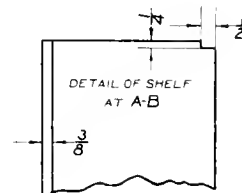
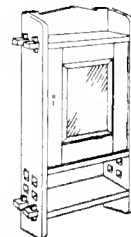
HALF-BLIND DOVETAIL



WASTE PAPER BOX

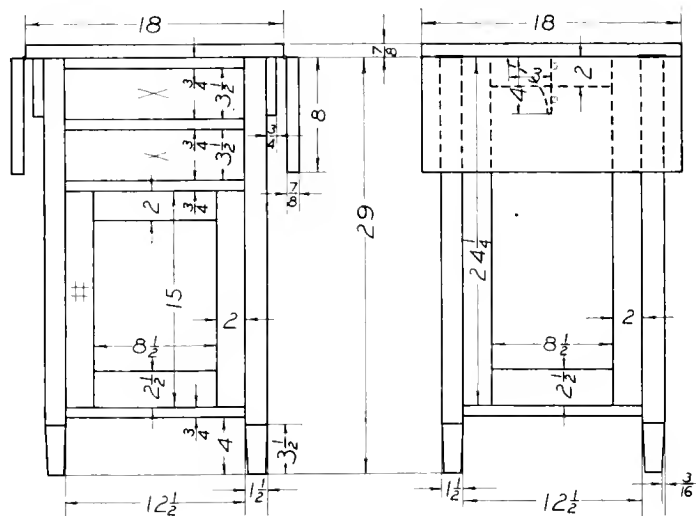


Technical drawing of a rectangular box, showing front and side views with dimensions in inches. The front view (left) shows a box with a total width of 15 inches and a total height of 32 inches. The top section is 2 inches high, and the main body is 30 inches high. The main body is divided into a top section of 12 inches and a bottom section of 18 inches. The bottom section contains four square compartments arranged in a 2x2 grid, each 4 inches wide and 4 inches high. The side view (right) shows a box with a total width of 15 inches and a total height of 32 inches. The top section is 2 inches high, and the main body is 30 inches high. The main body is divided into a top section of 12 inches and a bottom section of 18 inches. The bottom section contains four square compartments arranged in a 2x2 grid, each 4 inches wide and 4 inches high. The side view also shows a central rectangular area labeled "MIRROR 10x14". Dimensions are given in inches, with some values in fractions (e.g., 5/8, 3/4, 1/2, 1/4, 3/8, 1/8, 1/16, 1/32, 1/64, 1/128, 1/256, 1/512, 1/1024, 1/2048, 1/4096, 1/8192, 1/16384, 1/32768, 1/65536, 1/131072, 1/262144, 1/524288, 1/1048576, 1/2097152, 1/4194304, 1/8388608, 1/16777216, 1/33554432, 1/67108864, 1/134217728, 1/268435456, 1/536870912, 1/1073741824, 1/2147483648, 1/4294967296, 1/8589934592, 1/17179869184, 1/34359738368, 1/68719476736, 1/137438953472, 1/274877906944, 1/549755813888, 1/1099511627776, 1/2199023255552, 1/4398046511104, 1/8796093022208, 1/17592186044416, 1/35184372088832, 1/70368744177664, 1/140737488355328, 1/281474976710656, 1/562949953421312, 1/1125899906842624, 1/2251799813685248, 1/4503599627370496, 1/9007199254740992, 1/18014398509481984, 1/36028797018963968, 1/72057594037927936, 1/144115188075855872, 1/288230376151711744, 1/576460752303423488, 1/1152921504606846976, 1/2305843009213693952, 1/4611686018427387904, 1/9223372036854775808, 1/18446744073709551616, 1/36893488147419103232, 1/73786976294838206464, 1/147573952589676412928, 1/295147905179352825856, 1/590295810358705651712, 1/1180591620717411303424, 1/2361183241434822606848, 1/4722366482869645213696, 1/9444732965739290427392, 1/18889465931478580854784, 1/37778931862957161709568, 1/75557863725914323419136, 1/151115727451828646838272, 1/302231454903657293676544, 1/604462909807314587353088, 1/1208925819614629174706176, 1/2417851639229258349412352, 1/4835703278458516698824704, 1/9671406556917033397649408, 1/19342813113834066795298816, 1/38685626227668133590597632, 1/77371252455336267181195264, 1/154742504910672534362390528, 1/309485009821345068724781056, 1/618970019642690137449562112, 1/1237940039285380274899124224, 1/2475880078570760549798248448, 1/4951760157141521099596496896, 1/9903520314283042199192993792, 1/19807040628566084398385987584, 1/39614081257132168796771975168, 1/79228162514264337593543950336, 1/158456325028528675187087900672, 1/316912650057057350374175801344, 1/633825300114114700748351602688, 1/1267650600228229401496703205376, 1/2535301200456458802993406410752, 1/5070602400912917605986812821504, 1/10141204801825835211973625643008, 1/20282409603651670423947251286016, 1/40564819207303340847894502572032, 1/81129638414606681695789005144064, 1/162259276829213363391578010288128, 1/324518553658426726783156020576256, 1/649037107316853453566312041152512, 1/1298074214633706907132624082305024, 1/2596148429267413814265248164610048, 1/5192296858534827628530496329220096, 1/10384593717069655257060992658440192, 1/20769187434139310514121985316880384, 1/41538374868278621028243970633760768, 1/83076749736557242056487941267521536, 1/166153499473114484112975882535043072, 1/332306998946228968225951765070086144, 1/664613997892457936451903530140172288, 1/1329227995784915872903807060280344576, 1/2658455991569831745807614120560689152, 1/5316911983139663491615228241121378304, 1/10633823966279326983230456482242756608, 1/21267647932558653966460912964485513216, 1/42535295865117307932921825928971026432, 1/85070591730234615865843651857942052864, 1/170141183460469231731687303715884105728, 1/340282366920938463463374607431768211456, 1/680564733841876926926749214863536422912, 1/1361129467683753853853498429727072845824, 1/2722258935367507707706996859454145691648, 1/5444517870735015415413993718908291383296, 1/10889035741470030830827987437816582766592, 1/21778071482940061661655974875633165533184, 1/43556142965880123323311949751266331066368, 1/87112285931760246646623899502532662132736, 1/174224571863520493293247799005065324265472, 1/348449143727040986586495598010130648530944, 1/696898287454081973172991196020261297061888, 1/1393796574908163946345982392040522594123776, 1/2787593149816327892691964784081045188247552, 1/5575186299632655785383929568162090376495104, 1/11150372599265311570767859136324180752990208, 1/22300745198530623141535718272648361505980416, 1/446014903970612462

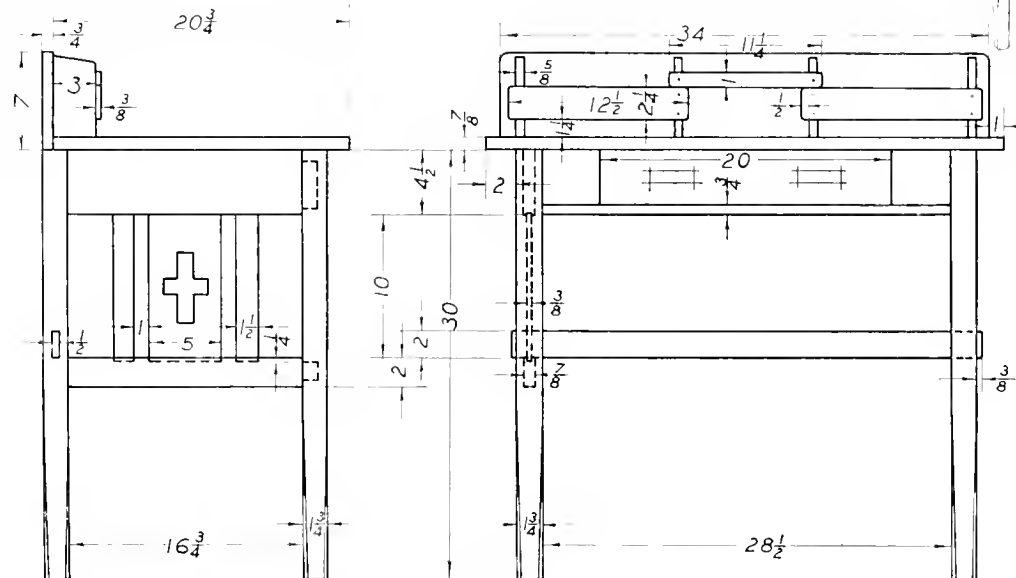




SEWING CABINET

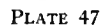


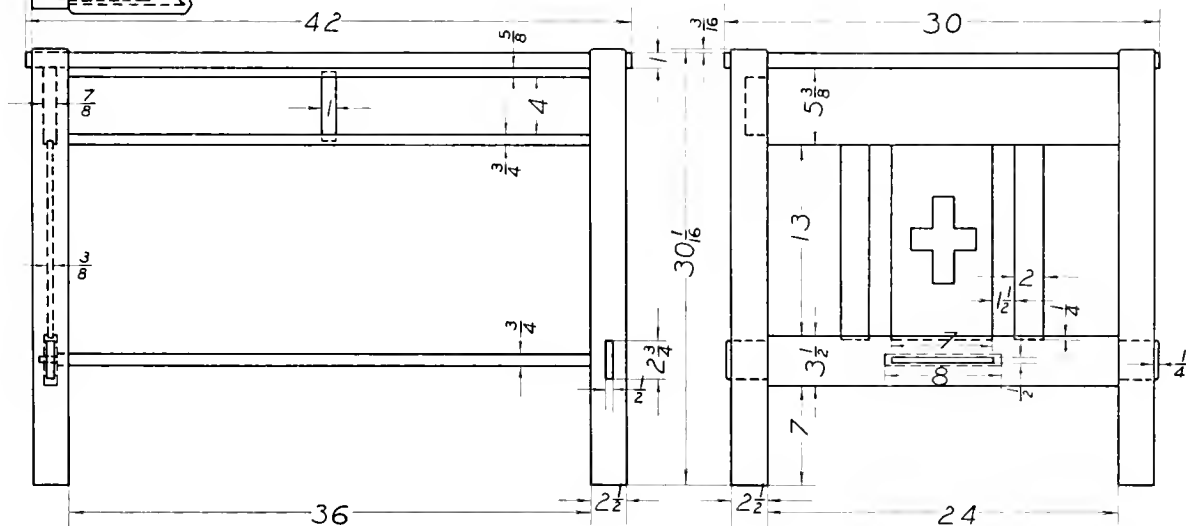
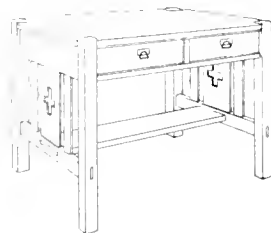
WRITING TABLE



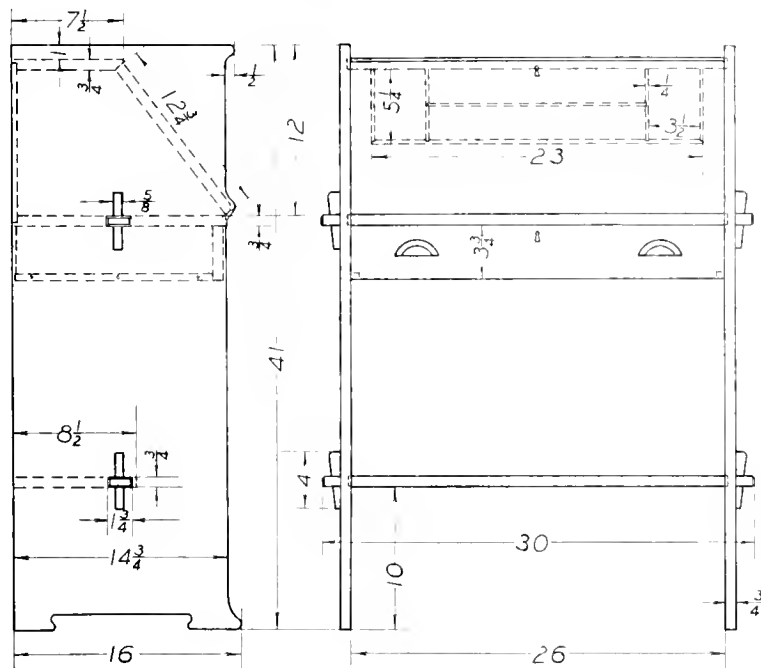


A perspective drawing of a wooden cabinet or chest of drawers. It has two doors on the front, each with a handle. Inside, there are shelves and drawers. The drawing is simple and appears to be a technical or architectural sketch.

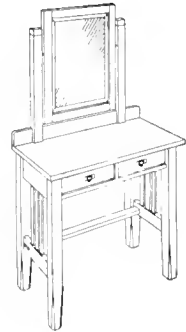




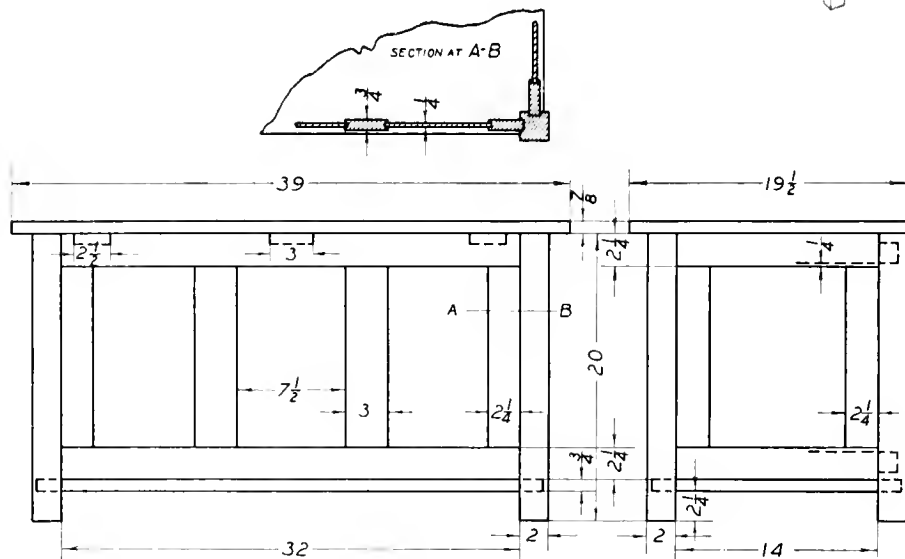
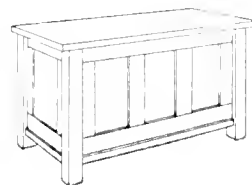
WRITING DESK



COMMERCIAL DESIGN

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